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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/912,065	07/25/2001	David Kuo	50103-368	3370

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EXAMINER	
CHACKO DAVIS, DABORAH	
ART UNIT	**PAPER NUMBER**
1756	

DATE MAILED: 11/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

eb11

Office Action Summary	Application No.	Applicant(s)	
	09/912,065	KUO ET AL.	
	Examiner	Art Unit	
	Daborah Chacko-Davis	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 September 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) *15-18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-11, and 13-14, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 6,383,574 (Han et al) in view of U. S. Patent No. 5,232,566 (Edmonson et al).

Han, in col 1, lines 6-12, in col 3, lines 3-29, in col 4, lines 20-41, in col 8, lines 1-49, in col 12, lines 12-28, discloses that a masked magnetic layer (employed in magnetic storage disks that are concentric) is exposed to ion implantation in the unmasked areas (plurality of sectors that are radially extending) at an implantation energy of about 100 KeV to change the magnetic properties of the magnetic layer selectively (at implanted portions) without changing the uniformity of the magnetic layer followed by magnetization of the magnetic domains in the magnetic layer in a the direction of the field and then switching the field (perpendicularly applied magnetic bias field) to align the domains of the ion-implanted portions and to realign the domains of the non-implanted portions (claims 1, 4, 6, 9, and 14). Han, in col 9, lines 1-30, discloses that the ions were implanted at a dose of about 10^{16} ions/cm^2 (claim 2). Han, in col 9, lines 15-30, discloses that the ions implanted have an atomic weight of

greater than about 35 a.m.u. (claim 8). Han, in col 8, lines 1-22, discloses that the masked magnetic layer if formed by photolithographically forming a liftoff stencil layer of a patterned photoresist layer formed by conventional methods (claim 10). Han, in col 10, lines 12-34, and in col 13, lines 41-45, discloses that the exposed photoresist mask is stripped after exposure to ion implantation, and that the ion-implanted magnetic layer is covered by a lead layer (protective) (claim 11). Han, in col 5, lines 30-45, discloses that an underlayer (non-magnetic conductor spacer layer) is formed on the substrate followed by the deposition of the magnetic layer (MR layer, reference 18 of figure 1) (claim 13).

The difference between the claims and Han is that Han does not disclose that the change in magnetic property created in the unmasked portions forms lower coercivity regions capable of functioning as servo marks that can be sensed by read/write heads. Han does not disclose that the coercivity of the exposed (implanted portion) region changes from about 500 Oe to about 15000 Oe (claims 3, and 5). Han does not disclose that the masked magnetic layer is exposed to argon ions to change the coercivity of the exposed region of the magnetic layer (claim 7).

Edmonson, in col 3, lines 1-6, in col 4, lines 3-39, in col 6, lines 50-56, in col 8, lines 35-43, and lines 63-68, discloses the implanted portions (doped portions of the magnetic layer) of the magnetic film of the magnetic recording medium displayed rapid decrease in coercivity levels. Edmonson, in figure 4, and in figure 13, illustrates the variation of coercivity levels caused by the variation of doping levels wherein the coercivity variations occur in the claimed

range i.e., a variation of 500 to about 2000 Oersteds. Edmonson, in col 5, lines 30-45, discloses the dopant gas is accompanied by argon gas.

Therefore, it would be obvious to a skilled artisan to modify Han in view of Andra by employing the method of using argon gas with a dopant gas and magnetizing the implanted areas to form servo tracks (areas of low coercivity that is readable by the transducing head) as taught by Edmonson because Edmonson, in col 8, lines 62-66, and in col 9, lines 1-3, discloses that the argon/dopant gas ratio can be varied to control the magnetic properties (including coercivity) of the magnetic recording film produced and Han in col 11, lines 1-8, discloses that the ion implantation process performed on the magnetic layer results in a magnetic layer with varying portions of magnetic coercivities.

3. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 6,383,574 (Han et al) in view of U. S. Patent No. 5,232,566 (Edmonson et al) as applied to claims 1-11, and 13-14 above, and further in view of U. S. Patent Application Publication No. 2001/0033453 (Belser et al).

Han in view of Edmonson is discussed in paragraph no.3.

The difference between the claims and Han in view of Edmonson is that Han in view of Edmonson does not disclose that the photoresist coated magnetic layer is patterned using a stamper to form the selectively masked magnetic layer.

Belser, in [0040], discloses that a stamper is imprinted onto the photoresist coated magnetic layer (recording layer) to form a patterned resist layer on the recording layer.

Therefore, it would be obvious to a skilled artisan to modify Han in view of Edmonson by employing the method of using a stamper to form the masked magnetic layer (recording layer) as taught by Belser, because Belser, in [0039], discloses that the using the stamper enables the photoresist layer to reproduce the format pattern of the stamper accurately.

Response to Arguments

4. Applicant's arguments with respect to claims 1-14 (filed in paper no. 10) have been considered but are moot in view of the new ground(s) of rejection.

A) Applicants argue that Han relates to the formation of a magnetoresistive element that functions as a read/write head itself rather than the magnetic media for storing data.

Han, in the abstract, in the col 4, lines 42-63, discloses that the MR element is used for the formation of the magnetic storage devices and not magnetic heads.

B) Applicants argue that Andra relates to increasing the coercivity rather than lowering the coercivity.

Andra relates to increasing the coercivity or modifying the coercivity of the magnetic layers and was used to reject the unamended claim 3 that recites an increase in coercivity rather than a decrease in coercivity. The rejection based on Andra has been withdrawn. However, Edmonson teaches lowering the coercivity (by ion implanting using argon ions) of the magnetic head based on the target requirement of the transducing head.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (703) 306-5923. If the examiner is unavailable, you may contact her supervisor, Mark F. Huff at (703) 308-2464. FAX communications should be sent to the official Right FAX number (703) 872-9306 for all responses. FAXES received after 4:00 P.M. will not be processed until the following business day.

dcd

November 20, 2003.

MARK F. HUFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700